# Nyadi Hydropower Limited

# Nyadi Hydropower Project (30 MW)

## Progress Report

(September 2020)

Kathmandu, Nepal

# Nyadi Hydropower Limited (NHL)

Buddha Nagar, Kathmandu, Nepal

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Monthly Progress Report

September 2020

| | | Position | Date |
|---|---|---|---|
| Prepared by | Bikram Dhoj Shahi | Project Engineer | October 2020 |
| Checked by | Bibek Karanjit | Senior Project Engineer | October 2020 |
| Approved by | Uttam Amatya | Chief Executive Officer | October 2020 |

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# 1. Introduction

## 1.1. Background

Nyadi Hydropower Project (NHP) was first identified in 1993 during the preparation of the Small Hydropower Master Plan. The feasibility study of the project (20 MW) was completed by Lamjung Electricity Development Company (LEDCO) in the year 2000.

In October 2006, Butwal Power Company Limited (BPC) and Lamjung Electricity Development Company (LEDCO) had an understanding to develop the NHP together. As per agreement made between BPC and LEDCO, Nyadi Hydropower Limited (NHL) was established on 2063/11/17 (01/03/2007) to undertake the NHP independently. The project is being developed through a Special Purpose Vehicle (SPV), by Nyadi Hydropower Limited with BPC as a major stakeholder. Feasibility study of NHP (30 MW) was completed by NHL in October 2010.

## 1.2. Overall Project Description

The Nyadi Hydropower Project (NHP) is a run-of-river type project, located in Lamjung District of Western Development Region of Nepal. The entire component from intake to powerhouse area located within the Ward no. 6 of Marsyangdi Rural Municipality, Lamjung District.

The project has an installed capacity of 30 MW and will generate 168.55GWh of energy annually. The generated power will be connected to a proposed NEA's Hub that will be constructed at Marsyangdi corridor, about 6 km south of the powerhouse. Moreover, about 250 m long adit tunnels which include Naiche adit, Surge adit and ventilation adit are also proposed to make 4 headings for excavation and construction of the headrace tunnel. Surge shaft is designed near the end of the headrace tunnel having diameter of 5.0 m and 35 m height.

An about 14 m diversion dam has been designed to construct across the Nyadi River. The water from intake is feed to underground settling basin and conveys it through about 3840 m long headrace tunnel and 745 m long penstock pipe. A surface powerhouse has been proposed on the right bank of Nyadi River at the Thulibesi. The gross head of the project is 334.40 m while design discharge of the project is 11.08 $m^3/s$.

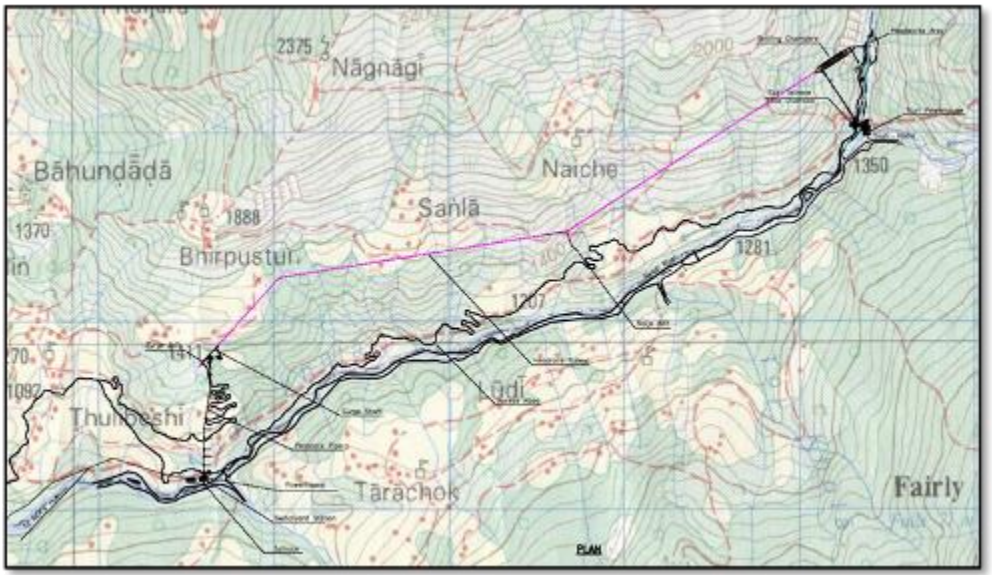


*Figure 1: General Project Layout of Nyadi Hydropower Project*

### 1.3. Completed Milestones

| S.N. | Milestones | Date |
|---|---|---|
| 1. | Electricity Generation License | Feb 27, 2013 |
| 2. | Power Purchase Agreement (PPA) | May 26, 2015 |
| 3. | Financial Closure or facility agreement | Feb 03, 2016 |
| 4. | Contract for the Government land lease and Tree Cutting approval signed with Ministry of Forestry & Soil Conservation | March16, 2016 |
| 5. | Financial Consultant appointed: A tripartite agreement between NHL, EBL and T.N Acharya & Co., Chartered | December 2, 2016 |
| 6. | Required Commercial Operation Date (RCOD) extended up to April 18, 2020 | December 26, 2016 |
| 7. | EPC Contract Agreement with ZHCIC for Lot 1: Civil works and Hydro-mechanical works Including Electro-mechanical | January 16, 2017 |
| 8. | EIA of Transmission Line Approved | March 29, 2017 |
| 9. | Client Consulting Services – Employer's Representatives for Lot-1 and Lot-2 | April 07, 2017 |
| 10. | Technical Consultant appointed: A tripartite agreement between NHL, EBL and Jade Consult P. Ltd. | June 27, 2017 |
| 11. | 132 kV Transmission line License | June 29, 2017 |
| 12. | EPC Contract Agreement with Urja International P. Ltd for 132 kV Transmission Line Works (Lot II) | July 12, 2018 |
| 13. | Agreement with CARE Rating Nepal Ltd. for rating of Initial Public Offer (IPO) of NHL. | May 17, 2019 |
| 14. | Agreement with Global IME Capital for managing the public issue of shares of NHL as an Issue Manager for IPO | May 21, 2019 |
| 15. | SEIA of Transmission Line Approved | June 07, 2020 |
| 16. | IPO Grading "CARE-NP IPO GRADE 4" received from CARE Rating for IPO of NHL | June 26, 2019 |

## 2. Institutional Arrangement

Following entities constitute the whole institutional arrangement of Nyadi Hydropower Project having Installed Capacity 30 MW

The Employer/Owner : Nyadi Hydropower Limited (NHL)

The Engineer/Consultant : Hydro-Consult Engineering Limited (HCEL)

Financing Institution : Everest Bank Limited as Lead Bank; Nabil Bank Limited and Global IME Bank Limited as Co-Lead Banks; Himalayan Bank Limited, Sunrise Bank Limited and Hydroelectricity Investment and Development Company Limited (HIDCL)

## 3. Tender Lot - I (EPC Contract for Civil Works, Electro-mechanical Works & Hydro-mechanical Works)

A contract for the major works of the project was signed on January 16, 2017 -- EPC Contract for Civil Works and Hydro-mechanical Works (Lot 1) including Electromechanical Works for Nyadi Hydropower Project (30MW) (Contract Identification No. NHL/NHP-2015/016-CH-1). The details are listed below.

| | | |
|---|---|---|
| 1 | Contractor: | Zhejiang Hydropower Construction & Installation Co. Ltd |
| 2 | Works: | EPC Contract for Civil Works and Hydro-mechanical Works (Lot 1) including Electromechanical Works for Nyadi Hydropower Project (30MW) (Contract No. NHL/NHP-2015/016-CH-1) |
| 3 | Contract Price Contract signed on : | US$ 39,500,000 or NPR 4,207,540,000 at the Exchange rate of USD1=NPR106.52, Jan 16,2017 |
| 4 | Date of Commencement of work: | 2017/02/10,delayed by contractor and Commenced on 2017/03/22 |
| 5 | Intended Work Completion Date: | April 05,2020 (1150days) |
| 6 | RCOD Date: | April 18, 2020 (Extended) |

## 4. Tender Lot- II (EPC Contract for 132 kV Transmission Line Works)

| | | |
|---|---|---|
| 1 | Contractor: | Urja International Pvt. Ltd |
| 2 | Works: | EPC Contract for 132 kV Transmission Line Works (Contract No. NHL/NHP-2017/019-TR-1) |
| 3 | Contract Price Contract signed on : | NPR 70,421,300 (Excluding VAT) July 12, 2018 (*USD Exchange Risk to be borne by NHL*) |
| 4 | Date of Commencement of work: | July 26, 2018 |
| 5 | Intended Work Completion Date: | December 14, 2019 (520days) Extended |
| 6 | RCOD Date: | April 18, 2020 (Extended) |

## 5. Contractor's Status of Site Mobilization

The Contractor ZHCIC's mobilization commenced on March 22, 2017 at site with the arrival of Temporary Building materials and Excavators. 48 workers including technical personnel are presently at the site. Contractor has completed mobilization. All equipment and staff have been mobilized in the site. The main camp is near to the powerhouse. All labor camps and other yards like storage yard, Hydro-mechanical, etc. are completed. The status of equipment, materials and personnel are as in the follows tables.

***Table 1.1: Equipment List at Project site***

| S.N. | Name | Nos. | S.N. | Name | Nos. |
|---|---|---|---|---|---|
| 1 | Excavator | 4 | 25 | Mucking tractor | 12 |
| 2 | Generator | 7 | 26 | Concrete mixture | 5 |
| 3 | Pick-up | 4 | 27 | Electric pump | 20 |
| 4 | Vibrator | 2 | 28 | Electric pump (Submersible) | 20 |
| 5 | Air Compressor | 7 | 29 | Sewage pump | 17 |
| 6 | Drill Machine Pusher Leg | 20 | 30 | Electric winch machine | 3 |
| 7 | Breaker | 1 | 31 | Scrapper bucket type rock debris transporting machine | 4 |
| 8 | Crawler down hole drill | 1 | 32 | Bar bender | 3 |
| 9 | Auto Transformer Starter | 5 | 33 | Steel plate rolling machine | 1 set |
| 10 | Dump truck | 3 | 34 | Steel flange correcting machine | 1 |
| 11 | Total station (TS02 plus) | 1 set | 35 | Pneumatic Pick | 5 |
| 12 | Air drilling (Jackhammer) | 20 | 36 | Wheel barrow | 25 |
| 13 | Air storage tank | 5 | 37 | Electronic truck scale | 1 |
| 14 | Shotcrete machine | 1 | 38 | Electric wire rope hoist | 1 |
| 15 | Cutting machine (Abrasive cutter) | 18 | 39 | Threading machine | 2 |
| 16 | Vibrating screen | 2 | 40 | Grouting Machine | 1 |
| 17 | Bar straightening cutter | 1 | 41 | Vibrator | 2 |
| 18 | Wheel Loader | 2 | 42 | Wheel loader(Small) | 3 |
| 19 | Welding machine | 32 | 43 | Concrete pump | 3 |
| 20 | Blower fan | 7 | 44 | Submerged water pump | 15 |
| 21 | Air receivers | 5 | 45 | Sump pump | 20 |
| 22 | Fuel tank | 2 | 46 | Self-priming pump | 5 |
| 23 | Transformers | 4 | 47 | Mortar mixture | 2 |
| 24 | Low voltage Distributor | 4 | | | |

***Table 1.2: Lab Equipment List at Project site***

| S.N. | Name | Nos. | S.N. | Name | Nos. |
|---|---|---|---|---|---|
| 1 | Grinding machine | 2 | 15 | Concrete Anti seepage Instrument | 1 |
| 2 | Steel model for mortar | 6 | 16 | Thermoelectric Thermostat Air-blowing Drying Chamber | 1 |
| 3 | Grinding compressive fixture | 1 | 17 | Concrete Mixer Controller | 1 |
| 4 | Plain bumper motor | 2 | 18 | Standard Square Hole Sieve | 1 |
| 5 | Universal testing machine controller | 1 | 19 | Cement Anti-compression and Anti-bending tester | 1 |
| 6 | Sieve shaker | 1 | 20 | ISO Cement Mortar Plain Bumper | 1 |
| 7 | Punching machine | 1 | 21 | Rebound Hammer | 2 |

| S.N. | Name | Nos. | S.N. | Name | Nos. |
|---|---|---|---|---|---|
| 8 | Thermostatted water curing chamber | 1 | 22 | Electronic Scale | 1 |
| 9 | Cement concrete standard curing chamber | 1 | 23 | Digital Caliper | 1 |
| 10 | Electronic Balance | 2 | 24 | Flaky Normalized Device | 1 |
| 11 | Cement Density Condensation Tester | 1 | 25 | Universal Material Testing Machine | 1 |
| 12 | Slump cone | 2 | 26 | Los Angeles abrasion test machine | 1 |
| 13 | Electric folding machine | 1 | 27 | Core cutter machine | 1 |
| 14 | Concrete Anti seepage Instrument Controller | 1 | 28 | Bolt puller (Pull out test machine) | 1 |

***Table 1.3: Materials stock at Project site***

| S.N. | Materials | Qty. | S.N. | Materials | Qty. |
|---|---|---|---|---|---|
| 1 | Drill Rod | 400 pcs | 16 | Engine oil | 9 drums |
| 2 | Stellidium alloy bit (42*22mm) | 2600 pcs | 17 | Safety belt | 42 pcs |
| 3 | Ventilation pipe (45 mm) | 6 pcs | 18 | Mortar spraying pipe | 70 rolls |
| 4 | Hose pipe (25 mm dia.) | 120 pcs | 19 | Metal sheet plate 8 mm (8"*4") | 25 pc |
| 5 | Scaffold couples | 3000 pcs | 20 | Jag shakti TMT rebar (16mm) | 80 tons |
| 6 | Steel rope | 3 roll | 21 | Jag Shakti TMT rebar (20mm) | 60 tons |
| 7 | M.S. Sheet (2mm) | 1700 kg | 22 | Jagdamba TMT rebar (25mm) | 22 tons |
| 8 | M.S. Angle ISA (40x40x5mm) | 400 kg | 23 | Formwork board | 1200 pcs |
| 9 | M.S. Black pipe (20x20x2mm) | 2000 kg | 24 | Lubricating oil | 40 drum |
| 10 | M.S. Black pipe (38x38x2.2mm) | 45 ton | 25 | Wood planning machine and its spare parts | 5 boxes |
| 11 | M.S. Black pipe (2.7mm) | 37060 kg | 26 | Steel plates for Penstock | 500 ton |
| 12 | M.S. beam ISMB (150*75 mm) | 7000 kg | 27 | Cement | 70 ton |
| 13 | Channel (125*65 mm) | 2375 kg | 28 | Sand | 1200 $m^3$ |
| 14 | Channel (150*75 mm) | 1580 kg | 29 | Aggregates | 1100 $m^3$ |
| 15 | Hume pipe (75cm dia.) | 6 pc | 30 | Diesel | 9000 ltr |

***Table 1.4: Mobilized Contractors personnel***

| S.N. | Position | Nos. | S.N. | Position | Nos. |
|---|---|---|---|---|---|
| 1 | Project Manager | 1 | 4 | Admin | 3 |
| 2 | Deputy Project Manager | - | 5 | Chinese Workers | 38 |
| 3 | Engineer | - | 6 | Worker (Nepali) | 6 |
| **Total Personnel = 48** | | | | | |

## 6. Project Progress

***Table 1.5: Project major progress up to September 2020***

| S.N. | Description | Total | Construction completed up to | | % completed |
|---|---|---|---|---|---|
| | | | August 2020 | September 2020 | |
| **1.** | **Mobilization** | **100%** | **100%** | **100%** | **100%** |
| **2.** | **Access Road Construction** | | | | |
| a. | Naiche to Headworks (New Track opening) | 3000 m | ~3000 m (1650 m as per design drawing and 1350 m along river bank) | ~3000 m | ~100% |
| b. | Headworks to Diversion Tunnel | | | | ~100% |
| **3.** | **Access Road Upgrading of Existing Track** | | | | |
| a. | Marsyangdi Bridge to Thulibesi Village | 100% | ~80% | ~80% | ~80% |
| b. | Thulibesi Village to Surge Shaft | 100% | ~80% | ~80% | ~80% |
| c. | Thulibesi Village to Naiche | 100% | ~80% | ~80% | ~80% |
| **4.** | **Temporary camp construction** | **100%** | **~90%** | **~90%** | **~90%** |
| **5.** | **Tunnel portal surface excavation** | | | | |
| a. | At Outlet | 100% | ~75% | ~75% | ~75% |
| b. | At Naiche Access Tunnel 2 | 100% | ~75% | ~75% | ~75% |
| c. | At Access Tunnel 1 | 100% | ~75% | ~75% | ~75% |
| d. | At Intake | 100% | | | ~75% |
| **6.** | **Access Tunnel Excavation** | | | | |
| a. | Access Tunnel 1 at Headworks | 296 m | | 296 m | ~100% |
| b. | Access Tunnel 2 at Naiche | 122 m | | 122 m | ~100% |
| c. | Flushing Tunnel | 63 m | | 63 m | ~100% |
| **7.** | **Headrace Tunnel Excavation** | **3840 m** | | **3840 m** | **~100%** |
| a. | From Outlet | | ~1738 m | ~1738 m | |
| b. | Access tunnel 1 towards Headworks | | ~50 m | ~50 m | |
| c. | Access tunnel 1 towards Access tunnel 2 | | ~519 m | ~519 m | |
| d. | From Naiche Access tunnel-2 towards Headworks | | ~1053 m | ~1053 m | |
| e. | From Naiche Access tunnel-2 towards Outlet | | ~480 m | ~480 m | |
| f. | From Intake | 230 m | ~230 m | ~230 m | 100% |
| g. | Penstock tunnel | 55 m | 55 m | 55 m | 100% |
| **8.** | **Surge Shaft** | | | | |
| a. | Ventilation Tunnel Excavation | 40 m | 40 m | 40 m | 100% |
| b. | Surge Shaft Excavation | 35 m | 35 m | 35 m | 100% |
| c. | Surge Shaft Concreting | 35 m | 35 m | 35 m | 100% |
| **9.** | **Penstock** | | | | |

| S.N. | Description | Total | Construction completed up to | | % completed |
|---|---|---|---|---|---|
| | | | August 2020 | September 2020 | |
| a. | Surface Excavation | 100% | ~100% | ~100% | ~100% |
| b. | Anchor Blocks | 11 Nos. | ~100% | ~100% | ~100% |
| c. | Pipe Laying | 770 m | 770.00 m | 770.00 m | ~100% |
| **10.** | **Headwork's** | | | | |
| a. | Cofferdam | 100% | | ~100% | Diversion by Distributary Structure |
| b. | Diversion Tunnel Excavation | 300 m | | ~300 m | ~100% |
| i. | Concreting of Diversion Inlet portion | 112 $m^3$ | | 112 $m^3$ | ~100% |
| ii. | Concreting of Diversion Outlet portion | 53 $m^3$ | | 53 $m^3$ | ~100% |
| c. | Dam side slope excavation | 100% | ~90% | ~5% | ~95% |
| d. | Intake | 100% | ~90% | ~5% | ~95% |
| e. | Sluice and Dam body | 100% | ~90% | ~5% | ~95% |
| f. | Stilling Basin | 100% | | 50% | 50% |
| g. | Approach Tunnel | 230 m | 230 m | 230 m | Excavation Completed |
| h. | Settling Basin | 62 m | 62 m | 62 m | Excavation and Widening completed |
| **11.** | **Powerhouse** | | | | |
| a. | Excavation | 100 % | 100% | 100% | 100% |
| b. | Concreting | 100 % | 95% | 95% | 95% |
| **12.** | **Tailrace** | | | | |
| a. | Excavation | 100% | | 100% | 100% |
| b. | PCC (C20) | 100% | | 100% | 100% |
| **13.** | **Powerhouse River Protection Works** | 1988 $m^3$ | 1988 $m^3$ | 1988 $m^3$ | 100% |
| **14.** | **Substation works** | | | | |
| a. | Excavation and Back filling | 100% | 65% | 65% | 65% |
| b. | Foundation Concrete work | 100% | 60% | 60% | 60% |
| **15.** | **132kV Transmission Line** | 6 Km | | | |
| a. | Excavation of Foundation | 100% | 50% | 50% | (Towers 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12, 13, 14 Completed) |
| b. | Concreting | 100% | 50% | 50% | (Towers 2, 3, 4, 5, 6, 7, 8, 9,10, 11, 12, 13, 14 Completed) |

## 6.1. Distributary Structure/Coffer Dam

River diversion from the Distributary structure to the Diversion tunnel has been completed on 1st January 2019. Masonry wall at Distributary structure for the diversion of high flood level has been completed.

## 6.2. Diversion Tunnel

The 300 m long diversion tunnel excavation has been finished. Concreting at Inlet and outlet part has been completed.

## 6.3. Dam and Intake

Excavation and concreting of first cut-off wall up to level 1372.00 m at dam site have been completed. Concreting of second cut-off wall and downstream cut-off wall up to level 1372.00 m have been completed. Likewise, a submerged sand trap at upstream of first cut-off wall up to level 1374.00 m and intermediate submerged sand trap wall up to 1381.00 m has been completed. Retaining wall of stilling basin at right bank of river up to level 1381.00 m has been completed. Curtain grouting work at first cut-off wall has also been completed. Grouting at both side of dam axis between first and second cut off wall has been completed. Concreting up to level 1398.00m at stop logs and radial gates section of Dam has been completed. Brick work of the control room and hoist room of the headworks has been completed and at intake hoist room is ongoing. First lift concrete work at the stilling basin up to level 1369.20masl has been completed. About 95% excavation quantity of headworks has been completed. Excavation of Approach tunnel (230m) has been completed. Lining of intake tunnel for C type rock class at CH 0+194m to 0+208m and CH 0+147m to CH 0+158m has been completed. Lining of Inlet transition section from CH 0+9.52m to 0+21.52m has been completed. Concreting work at intake up to trash rack cleaning machine (TRCM) hoisting slab level 1395.00masl and hoisting slab of intake gate up to level 1397.00masl has been completed. Concrete work at the roof of hoist room up to level 1402.00masl has been completed. Construction for the access road up to level 1390.50 of intake at the right bank of headworks has been completed, masonry wall for the access road area has been completed.

*Figure 2: Brick Work at the Control Room and Hoist Room of the Radial Gates*

*Figure 3: Brick Work at the Hoist Room of Intake*

### 6.4. Siuri Diversion System

Excavation of Siuri pumping outlet pool has been completed. Construction of outlet pool for storage of 1.1 $m^3/s$ discharge has been completed. Installation of three numbers of inlet pipe (40 cm diameter) and 70 cm diameter outlet pipe at overhead tank has been completed. Excavation for the retaining wall of pump house and pool of pump house up to level 1361.00masl has been completed. Plum concrete (C20) work for the retaining wall and water inlet pool of pump house up to level 1370.00masl has been completed for this month. Concrete work at the pump house up to the level 1370.00masl has been completed for this month. Outlet penstock pipe casing is ongoing.

*Figure 4: Concrete Work at the Pump House of Siuri Diversion up to Level 1370.00masl*

*Figure 5: Reinforcement Work at the Wall of Water Inlet Pool of Siuri Diversion System*

*Figure 6: Formwork Installation at the Water Inlet Pool of Siuri Diversion up to Level 1370.00masl*

*Figure 7: Reinforcement Installation at the Pump House of Siuri Diversion up to Level 1371.00 masl*

*Figure 8: Concrete Work at the Retaining Wall of Siuri Diversion Pump House*

## 6.5. Underground Settling Basin

Excavation of Underground Settling Basin has been completed and breakthrough from the Flushing tunnel to the Settling Basin was completed on 23rd January, 2019. The length of settling basin is 62 m and its dimension is 8m x 8m x 62 m. Excavation has been completed as size of approach tunnel and widening to its full size is completed and shotcrete lining has been completed. Flushing pipe installation (60cm Dia) and

reinforcement concrete lining at invert of settling basin has been done for this month. Concrete lining from settling basin to HRT is ongoing. Circular reinforcement concrete lining at flushing tunnel from settling basin to valve of flushing pipe has been completed for this month. Box culvert (size 1.5m*2.0m*27m) for the flushing tunnel at the outside of adit 1 has been completed.

*Figure 9: Flushing Pipe Installation at the Invert of Settling Basin*

*Figure 10: Concrete Work at the Invert of Settling Basin*

*Figure 11: Concrete Work at the Flushing Tunnel Level from 1368.60masl to 1370.20masl*

*Figure 12: Concrete Work at the Flushing Tunnel up to Crown Level 1371.20masl*

*Figure 13: Reinforcement and Formworks at the Settling Basin to HRT*

### 6.6. Headrace Tunnel

Excavation of Headrace tunnel (3840 m) has been concluded. HRT from outlet has been excavated up to 1738 m. Tunnel excavation was carried out in two stages first central part then the peripheral part. Some over break has occurred at weak shear zone. Temporary supports have been provided to those over break portion. 11 Nos. of steel ribs, 7 Nos. of steel ribs and 6 Nos. of steel ribs have been provided to HRT from outlet at Ch.3+182 m to 3+192.6 m, 3+202 m to 3+210 m and 3+979.82 m to 3+984.82 m respectively. 6 nos. of steel ribs provided to Ch.0+1066-1071.10 m due to over break. HRT from access tunnel 2 towards Outlet has been excavated up to 480 m. At Ch.0+2330 large over break about 25-30 m occurred with debris flow, cleaning of the debris has been completed. 519 m HRT tunnel excavation was completed from Access tunnel1 towards Access tunnel 2, over break from Ch. 0+886 m to Ch. 0+898 m has been provided with the support. C20 grade 75 mm thick invert lining up to Ch. 4+100 m has been completed. RCC lining from Ch 0+331m to 0+354 at downstream of Settling basin, from Ch 0+615m to 0+624m and from Ch 4+135.25 to 4+153.05 has been completed, from Ch 4+153.05 to 4+163.05 below spring level has been completed. Shotcrete at downstream of Adit 2 is has been completed at various section of Rock class I section. Grouting work from Ch 0+615m to 0+624m, 0+899m to 0+909m and 1+064m to 1+071m has been completed. Rock bolt at various section according to requirement of rock class has been completed. Invert cleaning of HRT after the lining work has been completed.

| S. N | Tunnel | Excavation Size (m) | Total length (m) | Progress up to last month (m) | Progress this month (m) | Total Progress (m) |
|---|---|---|---|---|---|---|
| 1. | Headrace tunnel (HRT) | 3-3.6m (w) x 3-3.6m (h) | **3840** | | | **3840** |
| 1.1 | HRT from outlet | 3-3.6m (w) x 3-3.6m (h) | | | | 1738 |
| 1.2 | HRT from access tunnel 2 towards Headwork's | 3-3.6m (w) x 3-3.6m (h) | | | | 1053 |
| 1.3 | HRT from access tunnel 2 towards Outlet | 3-3.6m (w) x 3-3.6m (h) | | | | 480 |

| S. N | Tunnel | Excavation Size (m) | Total length (m) | Progress up to last month (m) | Progress this month (m) | Total Progress (m) |
|---|---|---|---|---|---|---|
| 1.4 | HRT from access tunnel 1 towards Headworks | 3-3.6m (w) x 3-3.6m (h) | | | | 50 |
| 1.5 | HRT from access tunnel 1 towards Outlet | 3-3.6m (w) x 3-3.6m (h) | | | | 519 |
| 2 | Ventilation tunnel | 2.6m (w) x 3m (h) | 40 | | | 40 |
| 3 | Surge Shaft | 4.9m Diameter | 35 | | | 35 |
| 4 | Access tunnel 1 | 4m (w) x 3.5 (h) | 296 | | | 296 |
| 5 | Access tunnel 2 | 2.6m (w) x 2.8m (h) | 122 | | | 122 |
| 6 | Penstock Tunnel | 3-3.6m(w)x3-3.6m(h) | 68 | | | 68 |
| 7 | Diversion Tunnel | 3(w)-3.2(h) | 300 | | | 300 |
| 8 | Intake Tunnel | 4(w)x4(w) | 230 | | | 230 |
| | **Total** | | **4931** | | | **4931** |

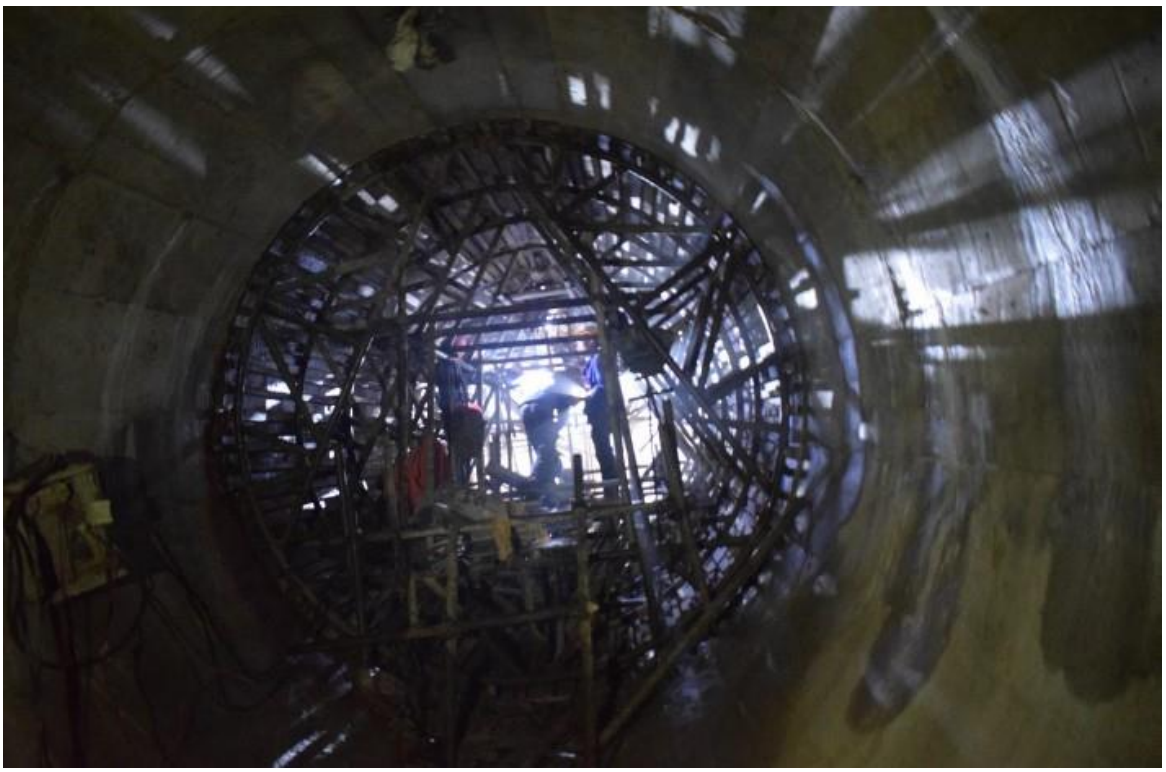

*Figure 14: Reinforcement and Formworks at the HRT near the Downstream of Settling Basin for Circular Lining*

## 6.7. Ventilation Tunnel, Surge Shaft and Connecting Tunnel

Concreting of Ventilation tunnel and Surge shaft has been completed. Concreting in the Connecting tunnel has been concluded in the month of January. Length of Ventilation tunnel is 40 m and Surge shaft is 35 m.

## 6.8. Outlet Portal

Excavation of portal has been accomplished but slope stabilization has yet to be done. The length of penstock tunnel from outlet is 68 m. Total penstock pipe installation and concrete casing has been completed.

### 6.9. Valve House

Excavation of valve house area has been completed. PCC work at valve house are has been completed. Concrete work of the valve house has been completed. Brick work at the entrance portion of valve house has been completed.

### 6.10. Penstock

The length of penstock alignment is 780 m. 13 nos. of saddle support (100%), 11 nos. of anchor blocks (100%) and concrete staircase has been constructed at back slope of powerhouse. Excavation of penstock alignment has been finished. About 620 m Concrete Casing of Penstock Pipe has been completed. About 100 m normal back filling as original ground slope has been completed. Anchor blocks nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 has been completed.

### 6.11. Powerhouse, Tailrace and River training works

Final level of powerhouse excavation is completed and the structural concreting has been completed. About 97% of Civil work has been completed till the month of September. Concreting work at slab of Assembly bay level 1047.00 m has been completed. Structural concreting of beam and column up to roof level at Assembly bay 1066.715 m and at Control room up to level 1058.345 m has been completed. Roofing of powerhouse about 90% work has been completed. Brick work for housing construction has been completed. Plaster work at outside and inner side of powerhouse has been completed. Painting work has been completed. Steel Doors and windows frames installation has been completed. Glass installation on windows has been completed. Railing installation at staircase and cut out portion has been completed. Drainage at the periphery of powerhouse building has been completed. Plaster work at floor of main unit, control room and auxiliary powerhouse has been completed. Laying of tiles on the floor of control room, main unit section has been started on the month June. Parqueting work and false ceiling work at the control room section of power house has been started from the month of July. Temporary camp dismantles and surface leveling at powerhouse area has been completed. Structural concrete of tailrace has been completed. River protection works has been completed in the powerhouse area. Retaining wall about 153m has been completed. Stone soling work at the slope of retaining wall of powerhouse about 153m has been completed. Construction of the boundary wall and fencing work at the boundary on the periphery of the powerhouse and switchyard area is started on this month and the work is ongoing.

*Figure 15: Construction of the Boundary Wall at the Powerhouse Area*

*Figure 16: Construction of the Boundary Wall at the Powerhouse Area*

## 6.12. Switchyard

The foundation of the power transformer, auxiliary transformer, station transformer, lightning arrestor, isolator, circuit breaker, cable trench, take of gantry, CT PT as well as bus bar has been completed for both bays. Sump pit has also been completed. Steel pillar for switchyard fabrication has been completed. Total 6 nos. of steel pillar are being fitted with ladder as per design, and painting is continuing at the welded parts as per steel structure drawing of EPC. Individual Lighting Rods of "E" section having 940*5000mm*4 Nos. have been completed. Similarly, "D" Section having 740*5000mm*4 Nos. has been completely manufactured. Fixing the position and erection of take of gantry, lighting arrestor and tower of bus bar has been completed. Earthings and the steel works has been completed. Cable trench for power transformer bay has also been completed. Furthermore, wire conduit pipe was installed for Power Transformer cable box. Steel tubular poles of the switch gear equipment for both the feeder has been erected at the switchyard on the month of September.

*Figure 17: Construction of the Boundary Wall at the Switchyard Area*

*Figure 18: Wire Mesh Installation at the Boundary Wall of Switchyard for Fencing Work.*

### 6.13. Access Road

The length of access road at different components of project site is as follows:

| Road Stretch | Length |
|---|---|
| Marsyangdi Bridge to Thulibesi Village | ~3.7 km |
| Thulibesi Village to Surge Shaft | ~2.52 km |
| Thulibesi Village to Naiche | ~4.25 km |
| Naiche to Headwork's | ~3 km |

*Figure 19: Access Road to Headworks near Naiche Village*

## 6.14. Camp Facilities

Permanent housing building works have been finished in the month of January. There are total 9 blocks of permanent housing camp. Flooring, painting, house wiring, sanitary works, fencing and leveling have been completed. Installation of main entrance gate has been completed and outdoor area preparation is still remaining. Employer's team and the Employer's Representatives team shifted to the permanent housing on 30th, January 2019.

*Figure 20: Permanent Housing Camp of Employers and Employer's Representative*

## 6.15. Quality Control Works

Concrete cube test (7 days and 28 days), tensile strength test and shotcrete test is continued to the period closing.

## 6.16. Hydro-mechanical Works

### 6.16.1 Gates

The following table shows the progress work of gates for the month of September.

| SN | Description of Gates | Quantity | Embedded Parts | | Frame | | | | Leaf | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Fabrication | | Installation | | Fabrication | | | | Installation | | |
| | | | Fabrication | Installation | Plate Cutting | Welding | Second Stage concreting | Frame Ins. | Plate Cutting | Welding | Drilling | Typical Parts | S. Str. Fabrication | Hoisting | Leaf Installation |
| **A** | | | | | **HEADWORKS** | | | | | | | | | | |
| 1 | Under sluice Radial | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | - | 0 | 0 |
| 2 | Under sluice | 2 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | - | 1 | 0 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stoplog | | | | | | | | | | | | | | |
| 3 | Sewage sluice gate | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | - | 1 | 0 |
| 4 | Intake gate | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| **B** | **SUB TOTAL** | **6** | | | | **OTHER GATES** | | | | | | | | | 0 |
| 1 | Bulkhead gate NAICHE | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | - | - | 0 |
| 2 | Bulkhead gate adit 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 0 |
| **C** | **SUB TOTAL** | **3** | | | | | | | | | | | | | 0 |
| | **TOTAL** | **9** | | | | | | | | | | | | | |

*Figure 21: Installation of the Fixed Electric Hoist for Sewage Gate and Stoplog*

*Figure 22: Trash Rack Cleaning Machine Beam Installation at Intake*

*Figure 23: Sewage Gate and Stoplog Gates Frames Installation at the Headworks*

*Figure 24: Stoplogs Frames Installation at Both Units*

*Figure 25: Installation of the Frames of Radial Gates*

*Figure 26: Bulkhead Gate Frame Installation at the Flushing Tunnel*

### 6.16.2 Penstock Pipes

Fabrication of High pressure penstock Pipe of Various thickness is ongoing at Hydro Mechanical Yard of ZHCIC. The following table shows the detail progress of the month of September.

## a) Overall Progress in Fabrication of Pipe till September 2020

The following table shows the overall fabrication of penstock pipe for the month September 2020

| S N | Thickness (mm) | Total length (m) | Fabrication (length m) | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| | | | plate cutting | Rolling | welding | NDT test | Sand blasting | Painting | |
| 1 | 10 | 61.52 | 61.52 | 61.52 | 61.52 | 61.52 | 61.52 | 61.52 | Dia 2000 |
| 2 | 10 | 208 | 208 | 208 | 208 | 208 | 208 | 208 | Dia 1750 |
| 3 | 12 | 114 | 114 | 114 | 114 | 114 | 114 | 114 | |
| 4 | 14 | 70.41 | 70.41 | 70.41 | 70.41 | 70.41 | 70.41 | 70.41 | |
| 5 | 16 | 150.61 | 150.61 | 150.61 | 150.61 | 150.61 | 150.61 | 150.61 | |
| 6 | 20 | 79.61 | 79.61 | 79.61 | 79.61 | 79.61 | 79.61 | 79.61 | |
| 7 | 22 | 41.68 | 41.68 | 41.68 | 41.68 | 41.68 | 41.68 | 41.68 | |
| 8 | 25 | 50.5 | 50.5 | 50.5 | 50.5 | 50.5 | 50.5 | 50.5 | |
| **TOTAL LENGTH** | | **776.33** | **776.33** | **776.33** | **776.33** | **776.33** | **776.33** | **776.33** | |
| | **TOTAL PROGRESS %** | | **100** | **100** | **100** | **100** | **100** | **100** | |

100% pipe has been welded by length
100% has gone through NDT test
100% has gone through sand blasting
100% has gone through painting

## b) Fabrication Details by Weight

The following table shows the Progress of Penstock Pipe by weight till September 2020

| SN | Thickness (mm) | Total length (m) | Total weight (kg) | This month progress (m) | This month progress (kg) | Net Fabricated (kg) | Net remaining (kg) |
|---|---|---|---|---|---|---|---|
| 1 | 10 | 61.52 | 30328.1 | 0 | 0 | 30328.1 | 0 |
| 2 | 10 | 208 | 89722.4 | 0 | 0 | 89722.4 | 0 |
| 3 | 12 | 114.23 | 59128.8 | 0 | 0 | 59128.8 | 0 |
| 4 | 14 | 70.41 | 42520.6 | 0 | 0 | 42520.6 | 0 |
| 5 | 16 | 150.61 | 103946.8 | 0 | 0 | 103946.8 | 0 |
| 6 | 20 | 79.61 | 68680.7 | 0 | 0 | 68680.7 | 0 |
| 7 | 22 | 41.68 | 39553.8 | 0 | 0 | 39553.8 | 0 |
| 8 | 25 | 50.5 | 54458.9 | 0 | 0 | 54458.9 | 0 |
| **Total length** | | **776.56** | **488340.1** | **0** | **0** | **488340.1** | **0** |

### c) Progress made in Installation of Penstock Pipe

The following table shows the Progress of installation of Bends of Penstock Pipe for the month of September 2020

| SN | Description | Diameter(m) | Length(m) | Till last month | This month progress (m) |
|---|---|---|---|---|---|
| 1 | Inside tunnel | 2000 | 61.52 | 61.52 | - |
| 2 | TB 1 - TB 2 | 1750 | 27.8 | 12 | - |
| 3 | TB 2 - TB 3 | 1750 | 13.02 | 13.02 | - |
| 4 | TB 3 - TB 4 | 1750 | 80.44 | 80.44 | - |
| 5 | TB 4 - TB 5 | 1750 | 101.2 | 18 | - |
| 6 | TB 5 - TB 6 | 1750 | 114.2 | 113.5 | - |
| 7 | TB 6 - TB 7 | 1750 | 62.5 | 62.5 | - |
| 8 | TB 7- TB 8 | 1750 | 109.9 | 109 | - |
| 9 | TB 8 - TB 9 | 1750 | 42.5 | 42.5 | - |
| 10 | TB 9 - TB 10 | 1750 | 84.6 | 84.6 | - |
| 11 | TB 10 - TB 11 | 1750 | 73.1 | 73.1 | - |
| | | **TOTAL** | **770.78** | **670.18** | **-** |

### d) Progress made in Fabrication of Bends

The following table shows the details about fabrication of Bends of Penstock pipe for the month of September 2020

| SN | Description | Total wt.(kg) | Fabrication | Installation |
|---|---|---|---|---|
| 1 | Underground penstock bend | 2270 | Completed | Completed |
| 2 | Bend 1 | 2072 | Completed | Completed |
| 3 | Bend 2 | 820 | Completed | Completed |
| 4 | Bend 3 | 1259 | Completed | Completed |
| 5 | Bend 4 | 1003 | Completed | Completed |
| 6 | Bend 5 | 1195 | Completed | Completed |
| 7 | Bend 6 | 780 | Completed | Completed |
| 8 | Bend 7 | 1409 | Completed | Completed |
| 9 | Bend 8 | 1914 | Completed | Completed |
| 10 | Bend 9 | 2174 | Completed | Completed |
| 11 | Bend 10 | 1525 | Completed | Completed |
| 12 | Bend 11 | 5840 | Completed | Completed |
| 13 | Reducer bend at unit 1 | 1274 | Completed | Completed |

| SN | Description | Total wt.(kg) | Fabrication | Installation |
|---|---|---|---|---|
| 14 | Reducer bend at unit 2 | 1274 | Completed | Completed |

## 6.17. Electro-mechanical Works

### 6.17.1 Main Stage Work Progress

The following are the major stage work progress for the month of September 2020.

#### a. Earthing Stipe

Galvanized MS clad stipe lied down in Corbel beam and roof gutters of machine hall for the purpose of earthing. All the embedded earthing parts were finished on the month of September.

#### b. EOT 50/10T Bridge Crane

All the accessories of the travelling crane were being installed, the cabin platform, safety railing was completely assembled as per the manufacturer's drawing. Crane track was completely installed; the track was centrally aligned. Foundation bolts M24*300 was embedded according to the drawings. Similarly, pressing plate, backing plate, shim stop washer and pallet was used as per manufacturer's instructions. Meanwhile, installation of resistors was completely connected according to the manufacturer's data and wiring diagram, resistor was placed in the direction of the girder.

Similarly, the protection box and the control box was also installed completely as per the wiring connection diagram. Likewise, the Gantry Conductor was also installed and firmly fixed on the conductor frame. Conductive device of the Trolley Cables was also connected completely, for this purpose the CEFR flexible marine rubber insulated neoprene-sheathed cable was used. The outlet terminal of conduits was lined with the rubber sheet. Tube connectors were used for connecting conduits. The cabin platform was also completely installed and finally come into operation by giving the temporary supply.

#### c. At 1044.00 masl

##### 1. Main Unit Valve

Both units of Main Spherical valve have been completely installed mechanically on the month of July. For this purpose, proper alignment and leveling as per the EPC was obtained, meanwhile the various components of the Unit i.e. air valve, hydraulic needle valve, main hole, upstream and downstream expansion joints were installed with the help of adequate size of nuts bolts as recommended by the manufacturer. Furthermore, control cabinet and other electrical control system is yet to be installed in further months ahead. This was properly earthed. Furthermore, the heavy hammer, brake interface, by pass system, overhaul ball valve was completely assembled for both of the Units.

##### 2. Nozzle

Four nos. of Nozzles for both Units were centerline aligned and the alignment tool was dismantled for the both of the units, for those whose center line was not obtained as required would will be disassembled and fixed with grinding method. Unit 1 of nozzle no. 2 has been installed.

### 3. Nozzle Control Mechanism

Pipe connection of the servo motor has been completely installed on the month of July for both Units.

### 4. Conical Cover & Shaft seal

Conical cover and shaft seal was mechanically fixed with the help of various sizes of Bolts M20*60, M24*65, Washer 20 & 24, Pin A20*50, respectively and also O-ring of 8m, 8dia for both of the Units on the month of May.

### 5. Deflectors

Deflector of the Unit #2 of Unit #1 has been completely installed on the month of July. Other 3. nos of Unit #1 and all the 4. nos of Unit #2 is still yet to be installed.

### 6. Pump House

Technical water supply of 4 nos. of pump sets having 45kW power were mechanically assembled for which upper column pipe was coupled with Bracket to the Transmission shaft to the short transmission shaft, and Lower column pipe connect was also connected to the impeller shaft, which was connected to the strainer. Similarly, 2 nos. of sets of firefighting pumps of 11kW power each were also mechanically assembled. These were properly earthed.

4 sets of Automatic Water treatment also mechanically assembled and properly earthed.

All the equipment was unboxed and kept on their respective positions and set ready for the installation.

### 7. Power House Lighting Fixtures

30W of LED angle lighting factory lamps of 5 Nos. were fixed around the MIV and Pump House area each spacing of 1.2m apart. Similarly, 40W LED Broad lighting water/dust proof lamps of 13 Nos. were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25. Similarly, the switch was also fixed at the height of 1.3m. For this connection, switch and distribution was setup on the month of January. Firefighting control box has been installed on the month of July.

## d. At 1047.6 masl

### 1. Valve Hydraulic Equipment

Two sets of Valve Hydraulic Equipment were delivered on the site this month, these were permanently fixed by the welding method and also properly earthed. Level was checked while fixing at its central alignment.

### 2. Governor

Two sets of Mechanical cabinet for both of the units were mechanically bolted and properly assembled and properly earthed on this month.

### 3. Governor Mechanical Cabinet

Two sets of Mechanical cabinet for both of the units were mechanically bolted and properly assembled and properly earthed on this month.

### 4. Governor Electrical Cabinet

Two sets of Electrical cabinet for both of the units were mechanically bolted and properly assembled and properly earthed on this month.

### 5. Rotor Top up Oil Pump

No further work has been progressed upon control mechanism on this month.

### 6. Control Room

Day lamps of 2*16W of 6 Nos. was fixed on the passage in between of machine hall and control room were installed. Similarly, LED 2*20W of 23 Nos. were fixed along the storage room and control switch room each spacing of 1.2m apart. For this purpose, the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25. Similarly, the switch was also fixed at the height of 1.3m.

### 7. Machine Hall Lighting Fixtures

Day light lamps of 3*20W of 18 nos, were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25 each spacing of 1.2m apart. Similarly, the switch was also fixed at the height of 1.5m. Firefighting systems was installed.

Three units of street light was mounted outside of the auxiliary room focusing the access road on has been installed on the month of July.

### 8. Main Shaft

Main shaft was installed for Unit 1 on the month of August.

Main shaft was installed for Unit 2 on the month of September.

## e. At 1050.845 masl

### 1. Excitation Transformer

Two sets of Excitation transformer for each unit of 15kVA was mechanical fixed and electrically earthed. Guard assembly for both units of the neutral point and the phase cable were installed as per EPC drawing.

### 2. Control Room

Station Auxiliary Transformer of one unit of three phase, 50Hz, 500kVA, 11kV/400V ONAN, enclosed dry type was fixed and earthed properly on the November. 25Nos. of LED 2*20W water/dust proof lights were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25 each spacing of 1.2m, similarly, for day light lamps of LED 3*20W for other rooms of 4 Nos. were electrically connected and also LED 2*16W, 4 Nos. were electrically fixed with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25 each spacing of 1.2m apart. Similarly, the switch was also fixed at the height of 1.5m.

### 3. Power House Lighting Fixtures

20 Nos. of LED 2*20W water/dust proof lights were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25, each spacing of 1.2m on this month.

**f. At 1054.045 masl**

### 1. Generator Lower Cover Plates

Base plate of the cantilever was fixed on the Lower cover plate base support with the help of 16*90 lock washer and M16*50 Bolts on the both Units on the month November.

### 2. Generator Lower Bracket

Lower Bracket for both the Units were fixed on the generator foundation with the help of Bolts M42*100, M48*140 & Pin A40*90, B30*80 on this month. Furthermore, the lower guide bearing assembly preparation has been started on the month of August.

### 3. Generator Stator Foundation

Generator Stator Foundation Sleeve to setup on the proper benchmarks has been completed on this month for both units. Furthermore, the rotor was installed for the Unit 1 on the month of August and reinstallation of upper bracket, upper air baffle and upper cover plate on the same month.

Rotor assembly for Unit 2 has been completed and set ready for the lifting, on the month of September.

### 4. Machine Hall and Assembly Lighting Fixtures

18 Nos. of LED 300W water/dust proof lights were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25, each spacing of 1.2m connection switch was fixed on this month.

### 5. Control Room

32 Nos. of LED 3*20W water/dust proof lights were electrically connected with the single as well as double core 10A wire connected to the junction box via embedded water gas pipe of DN25 each spacing of 1.2m.

## 6.17.2 Test Performed

Without Load and Capacity test was performed for the Electrical Overhead travelling crane main hook 50T of the Power house on the date 20th Oct 2019 in the presences of Employer's and Engineer's representative and the test was found out to be with in the permissible limiting value.

## 6.17.3 Electro-mechanical Equipment Dispatched at Site

The following Electro-mechanical equipment were dispatched at site till this month.

3.1.1 Power transformers having serial # LTD-190-0032, LTD-190-0035 respectively, along with its accessories has been dispatched at the site on the month of October 2019.

3.1.2 Fire-proof package of 20kg/bag of 50 bags has been delivered at site on October 2019.

3.1.3 Inorganic fire proof materials 25kg/bag of 16 bags has been delivered at site on October 2019.

3.1.4 Organic fire proof materials 20kg/bag of 40 bags has been dispatched at site on October 2019.

3.1.5 Fire proof sealing partition of (2000*500*5) mm of 80 pcs has been dispatched on the site on October 2019.

3.1.6 Cable trays of various sizing (2000*500*150) mm 163 pcs, (2000*200*100) mm 25 pcs, (670*670*150) mm 16 pcs, (870*840*150) mm 8 pcs respectively has been dispatched at site on this month of October 2019.

3.1.7 Electro-mechanical Equipment of 4th LC were dispatched on the month of January 2020.

3.1.8 Rotor and Stator dispatched at the side on the month of March 2020.

*Figure 27: Assembly of Rotor for Unit 2 of Powerhouse*

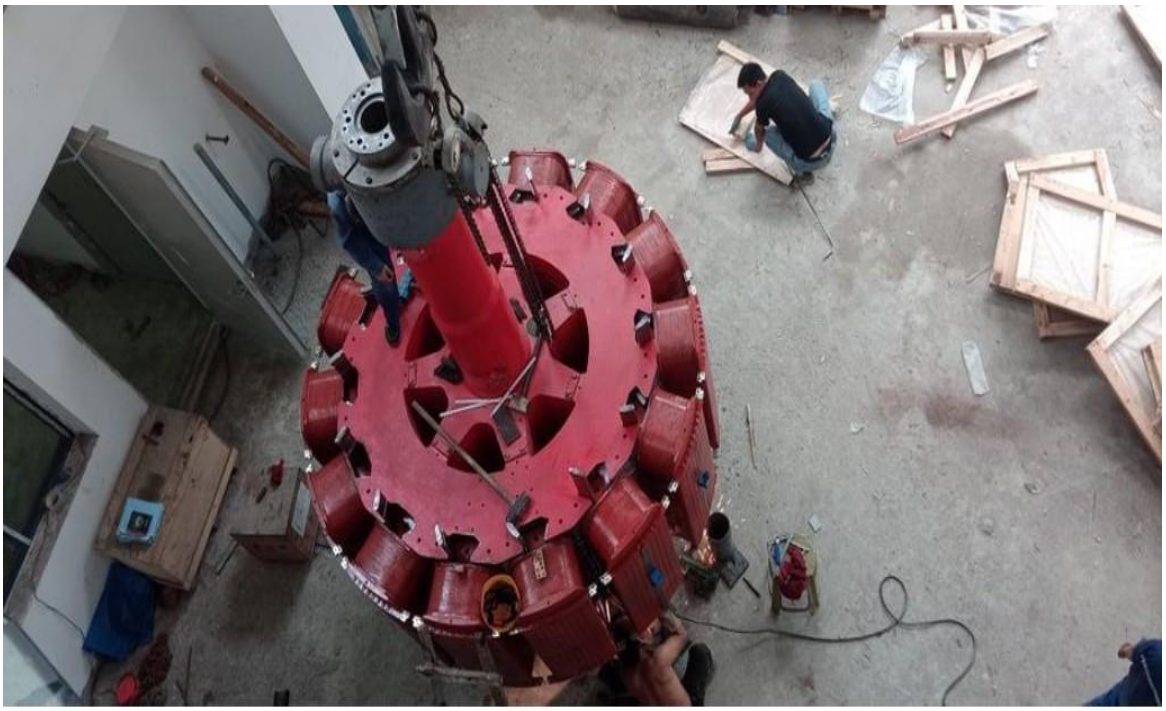

*Figure 28: Pole Assembling on the Rotor for Unit 2 of Powerhouse*

*Figure 29: Rotor Assembly Completed for Installation at Unit 2*

*Figure 30: Main Shaft Installation at the Unit 2 of Powerhouse*

## 6.18. 132kV Transmission Line

Public hearing for Supplementary Environmental Impact Assessment (SEIA) program of 132kV transmission line was organized on Ashwin 9, 2076 in Marsyangdi Rural Municipality, Buddhabazar, Lamjung as a part of Contingency plan for power evacuation. The transmission line tower to be installed for an additional 3.5 km has already been identified after related study and land survey at the site. Private & Government Land need to be procured from the private owner and shall be taken on lease from the Government entity

simultaneously. The SEIA has been approved on June 07, 2020. The foundation work for tower no. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14 of 132kV Transmission Line has been completed.

## 7. Government Land Leasing and the purchase of the private land

NHL had received letter from Department of Land Management and Archive dated January 17, 2019 on the waiver of land ceiling limit beyond 75 Ropanis as per the Ministry Level decision. Now, NHL can retain 313 Ropanis of land as mentioned in project IEE Report. NHL has signed a tripartite agreement between Department of National Park & Wild Life Conservation and Department of Forest & Soil Conservation for leasing of forest on June 30, 2019. Similarly, in respect of private land acquisition in respect of 132kV transmission line for an additional 3.5 km line, adequate process has already been started and procurement shall be completed after the release of lockdown.

## 8. Work Related to Corporate Social Responsibility

NHL has been carrying the works on Corporate Social Responsibility in the affected areas of the project with the mutual understanding with locals including Uppallo Nyadi Jaal Bidyut Sahayog Tatha Sarokar Samaj (UNJSSS) as per the directives of Government of Nepal.

NHL has conducted following CSR works in Project Affected Area at Marsyangdi Rural Municipality

| S.N | CSR Program | No. of Locals Benefited | Location | Expenses In NPR. | Status |
|---|---|---|---|---|---|
| **Year 2009** | | | | | |
| 1 | Electrical training | 10 | Project Affected Areas<br>390 hrs. Training, held at CTEVT | 7,51,000 | Completed |
| | Mechanical training | 10 | | | |
| | Plumbing training | 5 | | | |
| | Mason training | 15 | | | |
| | Scaffolding training | 15 | | | |
| **Year 2017** | | | | | |
| 1 | Electrical training<br>390 hrs. Training, held at CTEVT | 20 | Project Affected Areas | 4,43,395 | Completed |
| **Year 2018** | | | | | |
| 1 | Scaffolding, Welding and Mason training<br>390 hrs. Training held at CTEVT. NHL has sponsored 10 out of 65 trainees. Organized by Marsyangdi Rural Municipality | 10 | Project Affected Areas | 1,80,000 | Completed |
| 2 | Naiche Community Building | ~300 | Naiche Village 6 | 7,00,000 | Completed |
| 3 | Village road | ~700 | Thulibesi 6 | 5,00,000 | Completed |

| S.N | CSR Program | No. of Locals Benefited | Location | Expenses In NPR. | Status |
|---|---|---|---|---|---|
| 4 | Community Kitchen Building | ~210 | Thulibesi 9 | 3,50,000 | Completed |
| 5 | Village road | ~635 | Tarachowk | 3,50,000 | Completed |
| 6 | Temple | | Thankan | 2,50,000 | Completed |
| 7 | Electricity Wiring | | Chandradaya School, Bahundanda | 1,00,000 | Completed |
| 8 | Village road | ~500 | Thulibesi 6 | 3,00,000 | Completed |
| 9 | Water Supply | ~200 | Nana Bhirphustung Village 6 | 8,32,400 | Completed |
| 10 | Water Supply | ~300 | Naiche Village 6 | 4,40,089 | Completed |
| 11 | Internal Pedestrian Way | ~300 | Naiche Village 6 | 7,00,000 | Completed |
| 12 | Muda Weaving Training | 30 | Bahundanda | 30,365 | Completed |
| 13 | Poultry Farming and Livestock training | 30 | Thulibesi 6 | 59,350 | Completed |
| 14 | Women Health Education Training | 548 | Naiche, Tarachwok, Shera, Usta, Thulibesi, Bahundanda, Thakan, | 1,27,180 | Completed |
| 15 | Free Health Check Up Camp | 493 | Naiche, Tarachwok, Thulibesi, Bahundanda Bhulbhule, Ngadi, | 1,34,869 | Completed |
| 16 | Shree Jateswor Basic School Fencing | | Thulibesi 6 | 1,00,000 | Completed |
| 17 | Irrigation Canal | | Thulibesi 6 | 6,95,873.44 | Completed |
| **Year 2019** | | | | | |
| 1 | Plumbing Training | 10 | Thulibesi 9 (Participants are from Shera, Ludi, Tarachwok, Naich, Bahundanda, Thulibesi, Ding Ding, | 74,850 | Completed |
| 2 | Bee Keeping Training | 30 | Thulibesi 9 (Participants are from Marsyangdi Rural Municipality, Ward No. 6) | 16,145 | Completed |
| 3 | Public Awareness Program on World Environment Day 2076 | | Thulibesi 9 | 41,106 | Completed |
| 4 | Village Road | | Bhirpustun 6 | 7,00,000 | Completed |
| 5 | Community Building | | Thulibesi 6 | 6,00,000 | Completed |
| 6 | Community Building | | Lampata 6 | 3,00,000 | Completed |
| 7 | Village Road | | Ding Ding 6 | 3,00,000 | Completed |

| S.N | CSR Program | No. of Locals Benefited | Location | Expenses In NPR. | Status |
|---|---|---|---|---|---|
| 8 | Community Toilet | 400 | Usta 7 | 2,50,000 | Completed |
| 9 | Stone pavement | | Dahare | 50,000 | Completed |
| 10 | Naya Jyoti School Computer | | Naiche 6 | 50,000 | Completed |
| 11 | Kalika Primary School Computer | | Bhirpustun 6 | 50,000 | Completed |
| 12 | Clubs | | Wards of 6 | 1,00,000 | Completed |
| 13 | Dobhan Chour via Neupane Bahundanda Road maintenance 2 times (80,600+1,27,500) | | | 2,08,100 | Completed |
| 14 | Community Building | | Ludi 7 | 100,000 | Completed |
| 15 | Community Building | 90 | Shera 7 | 100,000 | Completed |
| 16 | Community Building | 160 | Cchinkhola 7 | 150,000 | Completed |
| 17 | Community Building | 375 | Tarachwok 7 | 100,000 | Completed |
| 18 | Community Building | 300 | Naiche 6 | 5,50,000 | Completed |
| 19 | Stone Pavement | 340 | Usta 7 | 4,00,000 | Completed |
| 20 | Village Road | | Phaijara, Bahundanda- | 2,00,000 | Completed |
| 21 | Community Building | | Bahundanda-6 | 3,00,000 | Completed |
| 22 | Village Road | | Thakan -3 | 4,00,000 | Completed |
| 23 | Village Road | 200 | Bhirpustun | 6,50,000 | Completed |
| 24 | Village Road (Gairi Ban Playground) | | Bahundanda 6 | 3,00,000 | Completed |
| 25 | Maintenance of Playground | 245 | Naya Gaun 7 | 1,30,000 | Completed |
| 26 | Stone Pavement | | Taranche 7 | 1,50,000 | Completed |
| 27 | Retaining Wall | | Bahundanda 6 | 2,50,000 | Completed |
| 28 | Stone Pavement | | Naiche 6 | 1,00,000 | Completed |
| 29 | Community Building Maintenance | | Thulibesi 6 | 4,00,000 | Completed |
| 30 | Road Maintenance | | Thulibesi 6 | 3,00,000 | Completed |
| 31 | Retaining Wall | | Thulibesi 6 | 5,00,000 | Completed |
| 32 | Community Building Maintenance | | Dingding 6 | 3,00,000 | Completed |

| S.N | CSR Program | No. of Locals Benefited | Location | Expenses In NPR. | Status |
|---|---|---|---|---|---|
| 33 | Shree Mahendra Dev Secondary School Hostel Building | | Taranche 7 | 2,00,000 | Completed |
| 34 | Solar Panel, TV and Electrification | | Dahare 6 | 50,000 | Completed |
| 35 | Community Building | | Lampata 6 | 2,70,000 | Completed |
| 36 | Electrification Work | | Nana 6 | 2,00,000 | Completed |
| 37 | Community Building | | Thulibesi 6 | 6,00,000 | Completed |

## 9. Initial Public Offer (IPO) of Nyadi Hydropower Limited

The Company as per the prescheduled capital plan has initiated the IPO process to meet up equity and cash flow requirements. Global IME Capital and NMB Capital has been appointed as an Issue Manager and Co-Issue Manager respectively for the public issue of shares of NHL. Similarly, CARE Nepal Ltd. has been appointed as a Rating Agency of initial public offer of shares of NHL. Approval from Electricity Regulation Commission for the proposed Initial Public Offer (IPO) of NHL has been received on 2076.09.25.

## Annex 1: Salient Features of Project

| S.N. | Items | Descriptions |
|---|---|---|
| 1 | **Project Name** | Nyadi Hydropower Project |
| 2 | **Location** | Thulibesi and Naiche Village, Marshyangdi Municipality, Lamjung District |
| 3 | **Type of Power Plant** | |
| | Type | Run-of-River (RoR) |
| 4 | **Hydrology** | |
| | Catchments area at intake site | 154.7 $km^2$ |
| 5 | **General Hydraulics** | |
| | Gross head | 334.4 m |
| | Design flow | 11.08 $m^3/s$ |
| | Installed Capacity | 30 MW |
| 6 | **Diversion Weir** | |
| | Diversion Type | RCC Gravity Free Flow |
| | Crest length | 14 m |
| | Height | 10 m above natural river bed |
| 7 | **Settling Basin** | Single Bay, 60m length parallel Section & 8m width |
| 8 | **Headrace tunnel** | |
| | Length | 3840 m |
| 9 | **Surge Shaft** | |
| | Type | Vertical shaft (Underground) |
| | Internal diameter | 5.0 m |
| | Height of surge shaft | 28.74 m |
| | Connecting conduit size | Circular with 3.2 m dia. and 2.80 m Height |
| 10 | **Ventilation Adit** | |
| | Length | 30 m |
| 11 | **Penstock** | |
| | Type | Surface and Buried , steel penstock |
| | Diameter | 1750 mm |
| | Length of surface penstock | 745 m |
| 12 | **Powerhouse** | |
| | Type | Surface |

| | | |
|---|---|---|
| | Size | 45.5 m long, 16.0 m wide and 29.2 m high |
| **13** | **Tailrace Canal** | |
| | Length | 37.0 m |
| **14** | **Turbines** | |
| | Type | Pelton turbine |
| | No of units | 2 Nos. |
| **15** | **Transmission Line** | |
| | Length | 6 km (Nyadi Switchyard to proposed 132 kV NEA Hub at Marsyangdi Corridor) |
| | Voltage | 132 kV |
| | No. of Circuits | Single |
| **16** | **Energy Generation** | |
| | Mean annual energy per year | 168.55GWh |
| **17** | **Access Road** | |
| | From Marshyangdi Bridge at Thakanbeshi to Headwork's site | 10.615 km |
| | From Thulibesi to Surge shaft | 2.393 km |
| | Total length | 13.50 km |
| **18** | **Construction Period** | 1150 Days |

## Annex 2: Project Schedule

### Nyadi Hydropower Project (30 MW)

| Construction Activities | Start Date | Finish Date |
|---|---|---|
| **As per PPA with NEA** | | |
| Required Commercial Operation Date | 2020-04-18 | |
| **CIVIL WORKS** | | |
| Preparatory works | 2017-02-10 | 2017-12-05 |
| Tunnel and Surge Shaft | 2017-05-17 | 2019-12-18 |
| Headworks | 2017-12-11 | 2019-12-08 |
| Settling Basin (Excavation) | 2018-10-16 | 2018-11-14 |
| Penstock | 2017-09-15 | 2019-09-05 |
| Powerhouse | 2018-02-15 | 2019-11-28 |
| **HYDROMECHANICAL WORKS** | | |
| Equipment design, manufacturing, transportation to the Site | 2018-04-15 | 2018-11-10 |
| Fabrication and installation of Gates and other Accessories | 2019-04-20 | 2019-12-18 |
| Penstock production and Installation | 2018-11-11 | 2019-05-19 |
| **ELECTROMECHANICAL WORKS** | | |
| Equipment finalization, design, manufacturing, transportation to the Site | 2018-04-10 | 2019-08-02 |
| All EM installation at Headworks, Powerhpuse and switchyard | 2019-06-27 | 2019-12-03 |
| **TRANSMISSION LINE** | | |
| Tender Document Preparation Tendering, Evaluation and Award of Contract | 2017-07-01 | 2018-06-14 |
| Construction | 2018-07-20 | 2019-11-30 |
| **Dry test** | **2019-12-04** | **2019-12-18** |
| **Preparatory works and water filling** | **2019-12-19** | **2019-12-28** |
| **Testing and Commisionning** | **2019-12-29** | **2020-02-26** |
| **Trial Run & Taking Over** | **2020-02-27** | **2020-04-04** |